REMARKS

The present Amendment amends claims 1-4 and 16-19. No new matter has been added.

Drawings

The non-final Office Action objected to the drawings under 37 CFR 1.83(a). A Replacement Sheet of Drawing Figure 6 is filed herewith to overcome the objection. Withdrawal of the objection is respectfully requested.

Claim Objections

The non-final Office Action objected to the claims for informalities. Claim 1 is amended to obviate the objection. Applicants believe that claims 12, 13 and 20 were objected to because they depend from claim 1. The term "the respective nozzle" was not located in claims 12, 13 and 20. Withdrawal of the objection is respectfully requested.

Claim Rejections- 35 U.S.C. § 102

In the Action, claims 1-12, 14, and 16-21 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0021324 to Yamada et al. ("Yamada"). This rejection is respectfully traversed.

Yamada teaches an ink jet recording device capable of controlling impact positions of ink droplets in electrical manner. The ink jet recording device includes a plurality of head modules with each formed with a plurality of nozzles for forming dots on a recording sheet. When the assembly of the head modules has any positional error, recorded dots will shift to undesirable positions. However, the ink jet recording device adjusts the dot forming positions to desirable positions in an electrical manner without actually and mechanically moving the head modules both in directions perpendicular to and parallel with a nozzle line.

Claim 1, as amended, is directed to a liquid discharge apparatus having a head with a plurality of liquid dischargers and nozzles with a respective one of the plurality of nozzles

operably associated a respective one of the liquid dischargers. The plurality of liquid dischargers and nozzles are aligned in a row and each one of the plurality of liquid dischargers defining an ink chamber. The liquid discharge apparatus includes a main controlling unit, a secondary controlling unit, a secondary-control executing unit and a plurality of heat-generating resistor assemblies. Claim 1 recites that each heat-generating resistor assembly includes a pair of heat-generating resistors with a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Claim 1 further recites that the main controlling unit is operative to individually control an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 1, as amended. Specifically, it is respectfully submitted that the applied art fails to teach a plurality of heat-generating resistor assemblies. with each heat-generating resistor assembly including a pair of heat-generating resistors and a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Furthermore, it is respectfully submitted that the applied art also fails to teach that the main controlling unit is operative to individually control an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors.

Thus, it is respectfully submitted that claim 1 is allowable over the applied art.

Claim 2, as amended, is directed to a liquid discharge apparatus having a head with a plurality of liquid dischargers similar to claim 1. Specifically, claim 2 recites that the liquid discharge apparatus includes a discharge-direction changing unit for changing a direction of a droplet discharged from the nozzle of each liquid discharger in at least two different directions in the row a reference-direction setting unit for individually selecting for the each liquid discharger

one of the directions of the droplet discharged from the each liquid discharger, controlled by the discharge-direction changing unit, as a reference direction and a plurality of heat-generating resistor assemblies. Claim 2 recites that each heat-generating resistor assembly includes a pair of heat-generating resistors with a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Claim 2 further recites that the discharge-direction changing unit is operative to change the direction of the droplet discharged from the nozzle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies, the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 2, as amended. Specifically, it is respectfully submitted that the applied art fails to teach a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors and a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Furthermore, in our opinion, the applied art also fails to teach that the discharge-direction changing unit is operative to change the direction of the droplet discharged from the nozzle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors. Thus, it is respectfully submitted that claim 2 is allowable over the applied art.

Claim 3, as amended, is directed to a liquid discharge apparatus having a head with a plurality of liquid dischargers similar to claims 1 and 2. Claim 3 recites that the liquid discharge apparatus includes a discharge-direction changing unit for changing a direction of a droplet discharged from the nozzle of each liquid discharger in at least two different directions in the row, a discharge-angle setting unit for individually selecting for the each liquid discharger discharge angles for the droplet discharged from the each liquid discharger, controlled by the

discharge-direction changing unit and a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors, a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Click 3 recites that the discharge-direction changing unit is operative to change the direction of the droplet discharged from the nozzle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies, the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 3, as amended. Specifically, it is respectfully submitted that the applied art fails to teach a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors and a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Furthermore, it is respectfully submitted that the applied art also fails to teach or suggest that the discharge-direction changing unit is operative to change the direction of the droplet discharged from the nozzle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors. Thus, it is respectfully submitted that claim 3 is allowable over the applied art.

Claim 4, as amended, is directed to a liquid discharge apparatus having a head with a plurality of liquid dischargers similar to the ones recited in claim's 1-3. Claim 4 recites that the liquid discharge apparatus includes a discharge-direction changing unit for changing a direction of a droplet discharged from the nozzle of each liquid discharger in at least two different directions in the row, a discharge-angle setting unit for individually setting for the each liquid discharger discharge angles for the droplet discharged from the each liquid discharger, controlled

by the discharge-direction changing unit and a reference-direction setting unit for individually selecting for the each liquid discharger one of the directions of the droplet discharged from the each liquid discharger, controlled by the discharge-direction changing unit, as a reference direction and a plurality of heat-generating resistor assemblies. Claim 4 recites that each heat-generating resistor assembly includes a pair of heat-generating resistors with a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Claim 4 recites that the discharge-direction changing unit is operative to change the direction of the droplet discharged from the nozzle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 4, as amended. Specifically, it is respectfully submitted that the applied art fails to teach a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors and a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber. Furthermore, it is respectfully submitted that the applied art also fails to teach or suggest that the discharge-direction changing unit is operative to change the direction of the droplet discharged from the nozzle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors. Thus, it is respectfully submitted that claim 4 is allowable over the applied art.

Claim 16, as amended, is directed to a method for discharging liquid from liquid dischargers with each liquid discharger having a nozzle and defining a chamber and with the liquid dischargers formed on heads and aligned in a row. Claim 16 recites the steps of:

providing a plurality of heat-generating resistor assemblies, each heat-generating resistor assembly including a pair of heat-generating resistors, a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber;

performing a main control of a discharge of droplets from the nozzle of each liquid discharger by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies, the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors;

performing a secondary control of the discharge of droplets from each liquid discharger along at least one direction different from a main direction of the main control in a row; and

individually determining whether or not a secondary controlling unit is operated for each liquid discharger.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 16, as amended. Specifically, it is respectfully submitted that the applied art fails to teach the step of providing a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors and a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber and the step of performing a main control of a discharge of droplets from the nozzle of each liquid discharger by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of the heat-generating resistors. Thus, it is respectfully submitted that claim 16 is allowable over the applied art.

Claim 17, as amended, is directly to a method for discharging liquid from liquid dischargers with each liquid discharger having a nozzle and defining a chamber and with the liquid dischargers formed on a plurality of heads and aligned in a row. Claim 17 recites the steps of:

providing a plurality of heat-generating resistor assemblies, each heat-generating resistor assembly including a pair of heat-generating resistors, a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber;

selecting a direction of droplets discharged from the nozzle of each liquid discharger from at least two different directions in a predetermined direction;

individually selecting for the each liquid discharger one of the directions as a reference direction; and

discharging the droplets from the nozzle in the selected direction by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies, the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 17, as amended. Specifically, it is respectfully submitted that the applied art fails to teach the step of providing a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors and a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber and the step of discharging the droplets from the nozzle in the selected direction by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of heat-generating resistors. Thus, it is respectfully submitted that claim 17 is allowable over the applied art.

Claim 18, as amended, is directed to a method for discharging liquid from liquid dischargers with each liquid discharger having a nozzle and defining a chamber and with the liquid dischargers formed on a plurality of heads and aligned in a row. Claim 18 recites the steps of:

providing a plurality of heat-generating resistor assemblies, each heat-generating resistor assembly including a pair of heat-generating resistors, a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber;

selecting a direction of droplets discharged from the nozzle of each liquid discharger from at least two different directions in a predetermined direction;

setting a discharge angle of the droplets independently for the each liquid discharger; and

discharging the droplets from the nozzle in the selected direction and set discharge angle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies, the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 18, as amended. Specifically, it is respectfully submitted that the applied art fails to teach the step of providing a plurality of heat-generating resistor assemblies with each heat-generating resistor assembly including a pair of heat-generating resistors and with a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber and the step of discharging the droplets from the nozzle in the selected direction and set discharge angle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of heat-generating resistors. Thus, it is respectfully submitted that claim 18 is allowable over the applied art.

Claim 19, as amended, is directed to a method for discharging liquid from liquid dischargers with each liquid discharger having a nozzle and defining a chamber and with the liquid dischargers formed on a plurality of heads and aligned in a row. Claim 19 recites the steps of:

providing a plurality of heat-generating resistor assemblies, each heat-generating resistor assembly including a pair of heat-generating resistors, a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber;

selecting a direction of droplets discharged from the nozzle of each liquid discharger from at least two different directions in a predetermined direction;

individually selecting for the each liquid discharger one of the directions as a reference direction;

setting a discharge angle of the droplets independently for each liquid discharger; and

discharging the droplets from the nozzle in the selected direction as the reference direction and set discharge angle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies, the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of heat-generating resistors.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 19, as amended. Specifically, it is respectfully submitted that the applied art fails to teach the step of providing a plurality of heat-generating resistor assemblies, each heat-generating resistor assembly including a pair of heat-generating resistors, a respective one of the plurality of heat-generating resistor assemblies being disposed in a respective chamber and the step of discharging the droplets from the nozzle in the selected direction as the reference direction and set discharge angle by individually controlling an amount of heat of the heat-generating resistors of each one of the plurality of heat-generating resistor assemblies with the amount of heat generated in one heat-generating resistor of at least one pair of the heat-generating resistors being different than a remaining one of the at least one pair of heat-generating resistors. Thus, it is respectfully submitted that claim 19 is allowable over the applied art.

Claims 5-11 and 20 depend from claims 1-4 and include all of the features of claims 1-4. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reason claims 1-4 are allowable as well as for the features they recite.

Claim 12 depends from claim 1 and includes all of the features of claim 1. Thus, it is respectfully submitted that the dependent claim is allowable at least for the reasons claim 1 is allowable as well as for the features it recites.

Claim 21 depends from claims 16-19 and includes all of the features of claims 16-19. Thus, it is respectfully submitted that the dependent claim is allowable at least for the reasons claims 16-19 are allowable as well as for the features it recites.

Claim Rejections- 35 U.S.C. § 103

In the Action, claims 13 and 15 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yamada in view of U.S. Patent No. 5,754,201 to Ishinaga et al. ("Ishinaga"). This rejection is respectfully traversed.

Claims 13 and 15 depend from claim 1. By virtue of this dependency, Applicant submits that claims 13 and 15 are allowable for at least the same reasons given above with respect to claim 1. In addition, Applicant submits that claims 13 and 15 are further distinguished over Yamada and Ishinaga by the additional elements recited therein, and particularly with respect to each claimed combination. Applicant respectfully requests, therefore, that the rejection of claims 13 and 15 under 35 U.S.C. § 103(a) be withdrawn, and these claims be allowed.

CONCLUSION

For at least the foregoing reasons, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the examiner is

respectfully requested to pass this application to issue. If the examiner has any comments or suggestions that could place this application in even better form, the examiner is invited to telephone the undersigned attorney at the below-listed number.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. SON-2918 from which the undersigned is authorized to draw.

Dated: September 14, 2007

Respectfully submitted,

By: _____

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